

CLAIMS

What is claimed is:

1. A housing for an implantable microstimulator comprising:
an elongated hollow tube formed of a magnetic field concentrating material, said hollow tube defining an interior region thereof for housing corresponding microstimulator electronics;
an electrically conductive wire coil wound around an outer surface of the hollow tube and adapted for electrical communication with the microstimulator electronics; and
a protective sleeve encasing the hollow tube and coil, the sleeve having first and second fluid tight sealed ends, the sleeve being formed of a material that is impervious to body fluids so as to insulate the hollow tube and coil from contact with said body fluids.
2. The housing of claim 1, wherein the magnetic field concentrating material comprises a ferrous material.
3. The housing of claim 2, wherein the ferrous material is ferrite.
4. The housing of claim 1, wherein the protective sleeve is formed of a ceramic material.
5. The housing of claim 1, wherein the microstimulator electronics positioned within the interior region of the hollow tube comprises at least one integrated circuit (IC) chip in electrical communication with the coil.
6. The housing of claim 5, wherein the at least one IC chip comprises at least two IC chip's electrically interconnected by an electrically conductive flex circuit, wherein a selected electrical terminal contact on one IC chip is electrically connected to a selected electrical terminal contact on the other IC chip by the flex circuit.

7. The housing of claim 6, wherein the flex circuit is flexible so as to provide rotational movement of one IC chip relative to the other IC chip such that they are positionable in close proximity to one another in face-to-face fashion.

8. The housing of claim 5, wherein the interior region of the hollow tube includes a silicone potting matrix sufficient to fill any voids existing within the hollow tube subsequent to the placement of the medical device electronics therein.

9. The housing of claim 8, wherein the potting matrix includes a getter for absorbing any water introduced within said an interior region.

10. The housing of claim 1, wherein the microstimulator electronics is powered by a rechargeable battery, the microstimulator electronics further including a rectifier circuit coupled to the rechargeable battery, said rectifier circuit being in electrical communication with the coil, whereupon exposure of the coil to a varying magnetic field causes electrical currents to be generated within the coil and rectified in a manner to recharge the battery.

11. The housing of claim 1, wherein the microstimulator electronics includes radio frequency (RF) transmission and receiver circuitry wherein the coil is electrically coupled to and adapted to communicate with the RF circuitry as an antenna therefore.

12. The housing of claim 1, wherein the hollow tube has an essentially cylindrical shape and circular cross-section, with an outer diameter of about 2.26 mm and inner diameter of about 1.78 mm.

13. The housing of claim 1, wherein the hollow tube has an axial length in the range of about 3 mm.

14. The housing of claim 1, wherein the protective sleeve has an outside diameter in the range of about 3.2 millimeters to 8.0 millimeters.

15. The housing of claim 1, wherein the coil has turns in the range of about 10 to 600.

16. The housing of claim 1, wherein the wire is about forty-four gauge.

17. A housing comprising:

an elongated hollow tube formed of a magnetic field concentrating material, said hollow tube defining an interior region adapted for housing electronic circuitry;

an electrically conductive wire coil wound around an outer surface of the hollow tube and adapted for electrical communication with the electronic circuitry; and

a protective sleeve encasing the hollow tube and coil.

18. The housing of claim 17 wherein the hollow tube has an axial length of about 3 mm.

19. The housing of claim 17 wherein the hollow tube has an outer diameter of about 2.26 mm.

20. The housing of claim 19 wherein the hollow tube has an inner diameter of about 1.78 mm.

21. The housing of claim 20 wherein the hollow tube has a wall thickness dimension of about .24 mm.

22. The housing of claim 17 wherein the coil has turns in the range of about 10 to 600.

23. The housing of claim 17, wherein the wire is about forty-four gauge.